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SOCIETY OF ARTS.

FRIDAY, MARCH 11th, 1853.

THIRTEENTH ORDINARY MEETING,

Wednesday, March 9th, 1853.

The Thirteenth Ordinary Meeting of the Society was held on Wednesday, the 9th inst., Henry Cole, Esq., C.B., in the chair.

The following were elected Members:

Beaumont, Wentworth Blackett, M.P., Bywell Hall, Newcastle-on-Tyne.
Clive, the Venerable Archdeacon, Welshpool.
Cunliffe, Edward, Highbury-place.
Duffield, William Ward, Chelmsford.
Ellis, William, Champion-hill, Camberwell.
Hutt, William, M.P., Gibside, near Gateshead.
Jenour, Harry James, 2, Field-court, Gray's-inn.
Sherriff, John William, Ludgate-street;

and the names of eight candidates for membership were read.

Mr. William Stones, of Queenhithe, read a paper, "On the Materials and Machinery Employed in the Manufacture of Paper."

The author stated, that however interesting it might be to trace the history of writing materials, the time allotted for the reading of the paper would not allow of more than a very slight notice of the substances upon which the ancients were accustomed to record their thoughts.

These were:—Stone, as in the instance of the law of Moses; Metal—Pliny stating, "At first men wrote on palm-tree leaves, and afterwards on the bark or rind of other trees. In process of time public monuments were written on rolls of lead, and those of a private nature on linen, books, or tables covered with wax." Parchment,—the manufacture and use of which are mentioned by Josephus, Diodorus Siculus, and other authors, and from its name Charta Pergamena (paper of Pergamus), it is highly probable that its mode of preparation was improved, or its manufacture and use more general there than in other places,—parchment is especially mentioned by Paul; Ivory—such tablets were in use by the rich Romans; Wood—from an early period this substance has been used, as we find Moses is enjoined to "Take of every one of them a rod according to the house of their fathers, twelve rods, write thou every man's name upon his rod;" and in Ezekiel, "The sticks whereon thou writest shall be in thine hands;" wooden tablets were not disused in Western Europe until the fourteenth century. They were in general covered with wax, and the writing was executed with styles which at one end were pointed for the purpose of inscribing the letters, and smooth at the other for erasing.

A specimen of waxed paper, in present use amongst the Arabs, was exhibited, and also the model of a frame, as used by the ancient Britons, who cut their letters upon sticks which were most commonly square, but were sometimes formed into three sides; consequently a single stick contained either three or four lines; several of these sticks were fitted together in the same frame.

Leaves of Plants;—in the British Museum and the Library of the East India House, there are many manuscripts written on leaves of plants in the Sanscrit and other languages; the common books of the Burmans are composed of the Palmyra leaf. The only attempt at manufacture in the ordinary sense of the word was in the case of the Papyrus, commonly, but incorrectly, said to have been prepared from the leaves of the plant, but really obtained by separating the thin plates of cellular tissue which lie just beneath the exterior of the stem, those nearest the centre being esteemed the best. The quantity made by the Egyptians must have been enormous, judging by the number of rolls frequently found in the tombs, and from the manuscripts dug out of Herculaneum.

It is highly probable that the manufacture of paper from pulp was first invented in China, about the commencement of the Christian era; and was thence brought to Mecca along with the article itself in the beginning of the eighth century, whence the Arabs carried it, in their rapid career of conquest and colonization, to Spain at the end of the ninth, or beginning of the tenth century.

The first paper mill in Germany was established at Nuremberg, in 1390.

In our own country the earliest trace of the manufacture occurs in a book printed by Caxton, about the year 1470, in which it is said of John Tate;

> "Which late hathe in England doo make thys paper thynne,
> That now in our Englyssh thys booke is prynted inne."

That it was considered worthy of notice of Majesty, is evident from an entry in Henry VII.'s Household Book: "25th May, 1498. For a rewarde geven at the paper-mylne, 16. 8." Again, 1499: "Geven in rewarde to Tate of the Mylne, 6s. 8d."

A German jeweller in the service of Queen Elizabeth, erected a mill at Dartford, about the year 1588, and so important was the matter esteemed that the proprietor was knighted by that Queen, and the extent of the operations may be judged from the remarks of a poet of the time:

> "Six hundred men are set at work by him,
> That else might starve, or seek abroad their bread;
> Who now live well, and go full brave and trim,
> And who may boast they are with paper fed."

The author observed, that the manufacture did not appear to have been successful, and quoted the remarks of Fuller, who, in his "Church Worthies," after describing the various peculiarities of paper made by different nations, lamented that in Cambridgeshire the paper-mills had been stopped, and strongly urged a renewal of the business.

After this, the making of paper appears to have been revived, as it is spoken of by Addison in the "Spectator," No. 367, May 1, 1712, as one of the established national industries. He remarks, in reference to paper-mills, that by their means "the whole nation is in a great measure supplied with a manufacture for which, formerly, she was obliged to her neighbours."

Having given this historical sketch of the subject, the following statistics of the present state of the manufacture were furnished:—Paper-mills in England, 327; in Scotland, 51; and in Ireland, 37; of which there are at work, 304 in England, 48 in Scotland, and only 28 in Ireland. Paper charged with duty—

	England.	Scotland.	Ireland.
	105,712,913 lbs.	28,600,019 lbs.	6,719,502 lbs.
Duty,	£693,741	£187,687	£44,096

Paper exported—

	England.	Scotland.	Ireland.
	6,568,268 lbs.	1,040,555 lbs.	9,248 lbs.
Paper-hangings	1,155,012 sq. yds.	161,164 sq. yds.	
Drawback,	£43,234	£6,946	£60

The duty being 925,524*l.*, the annual value of paper manufactured in this country cannot be less than four times that sum, or 3,702,096*l.*, the average value of paper being estimated at 6*d.* per lb. With an annual production of nearly four millions, and an export trade of a quarter of a million, capable of vast extension, the paper manufacture must be regarded as an important branch of the national industry.

The materials employed in the manufacture, came next under consideration. Brief reference was made to the mode of manufacturing paper in China, whence our India paper is derived. The paper of the Chinese is principally made of bamboo, the younger stalks being preferred. The bundles are thrown into a reservoir of mud and water, and buried in the ooze for about a fortnight to soften them; they are then taken out, cut into pieces of a proper length, and put into mortars with a little water, and pounded to a pulp with large wooden pestles. The semi-fluid mass, being cleansed of the coarsest parts, is transferred to another vessel, into which the workman dips his mould, which is constructed of bamboo in small strips, rounded and smoothed. The so-called rice-paper is not truly a manufacture, but is obtained from a small plant, whose stem is cut spirally round the axis into a thin lamina, which is then unrolled and flattened out by pressure. Its character as a cellular tissue may be easily shown by magnifying a portion of it.

Linen, or materials made of flax, either in the state of new pieces or old fabrics, is particularly valuable for the strength which it imparts to the manufactured paper. In addition to the home supply, large quantities are annually imported into this country from Germany. Cotton is too valuable in its state as imported to be used in this manufacture, and is generally obtained from old white or printed goods. Cotton rags are also imported from the Continent. Flax and cotton waste, also used very largely, are the portions of the raw materials not available for being made up into woven fabrics. Hemp, or rope in the untarred state, is a very valuable material; when tarred it is used for brown paper principally. Specimens of paper from the plantain were exhibited, as also of wood; and the author remarked that the idea of making paper from wood pulp was not new, and that two patents were taken out in 1852 for different processes of preparing such pulp; nevertheless, this kind of raw material had not been brought into any extensive use. It was observed that any fibrous vegetable substance,—as the inner bark of trees, the stalks of the nettle, the tendrils of the vine, the bine of the hop,—might be used; but that up to a very recent period no material had been found to answer so well as linen, hempen, or cotton rags. Woollen cloth or silk could not be beaten into a suitable pulp; wool particularly giving a hairy texture to the surface. Lately, however, straw had been made available in the manufacture of paper; and the specimens exhibited showed that ere long it would, if it had not already, become a formidable rival to the old-established materials.

With reference to some of the materials named, the great objection to their use appeared to be the cost of carriage from the countries of their abundance. Whether the establishment of bleaching-houses, and the reduction of the crude article into half stuff in its native haunts, would answer as a commercial speculation, was an open question. In a sanatory point of view, as tending to destroy miasma, the erection of such factories might be beneficial.

Other materials, used in various combinations —many of them for the production of coloured paper, of which specimens were exhibited—were then passed rapidly in review; and the want of a standard work on colour-making, founded on correct theory and actual experiment, demonstrated.

The actual processes in the manufacture were next brought before the meeting. It was urged that the subject of water power deserved much more attention than it at present received,—paper-mills being generally situated on small streams, liable to considerable variation in the quantity of water. It was therefore of the first importance, that the mode of applying the force of the stream when at its minimum should be such as to secure the most effective result. Most of the paper-mills in this country use the common undershot wheel. Many of them during dry seasons work only half time, and even less, or, which is equivalent, prepare material for half the vats only. It was suggested that the form of the wheel might in many instances materially influence the quantity of work done. The importance of the question was increased by the consideration of the fact, that all improvements in draining land tend to the occasional decrease of water supply to the paper manufacturer. An inquiry into the best form of water-wheel—whether undershot, overshot, or turbine—with an account of the depth of the fall, and effective per-centage, was very desirable.

The operations of cutting the rags into shreds, their subsequent dusting in machines, and the boiling in an alkaline ley for the purpose of cleansing the material were described; the best means of boiling being considered that in which the rags are placed in a vessel revolving upon side pivots where the steam enters, the boiler revolving three or four times every hour. Rags, after these manipulations, are subject to the further process of comminution in a machine termed an Engine; the object being obtained by causing the rags to pass between a series of fixed blades or cutters, and a series of blades attached to a revolving cylinder. The distance between the fixed and moving blades is capable of adjustment by elevating or depressing the bearings upon which the shaft of the cylinder reposes; and the cylinder is raised or lowered by a screw, and caused to cut coarser or finer by enlarging or diminishing the space between the fixed cutters in the block and those in the cylinder. The engine is supplied with a constant stream of water, regulated by a stop-cock, and when a supply of water and rags has been introduced into the engine, the water is thrown into a current by the motion of the roll, and the rags are drawn between the teeth of the roll and those of the plate. The continual revolution of the water and rags causes the latter to be thoroughly washed, and by lowering the roll gradually nearer to the plate the rags are cut, torn, and chopped to pieces. A very important improvement for effecting the grinding and washing rags was here described, consisting of the introduction of a second roll placed behind the first, and made to revolve more rapidly than the first, and from its position the rags are thrown upon it by the first in an opened-out condition, whereby it acts upon every fibre; whereas in the ordinary engine they go in before the roll in large wedge-like masses, and a great deal of the power is consequently lost. An entirely new system of washing apparatus is adapted to this engine, and consists in making certain parts of the engine hollow, covering such openings with woven wire or perforated metal. Through these wired surfaces and perforated plates the dirty water passes into the recesses, and thence by two or more pipes into a receptacle; slides are attached to the ends of the pipes and alternately opened and shut. By these means the stoppage of the flow in the pipes causes a cessation of suction through the wires and perforated plates, and if any fibres of rags have been drawn into the interstices of the wires they are drawn out and carried forward in the engine by the flow of water and pulp over them; and thus the straining surfaces, or perforated plates, are kept clean.

After bleaching, which is effected with chlorine, the material is subject to another grinding, until finally reduced to fine pulp. The preparation of pulp is the same, whether the paper is intended to be made by hand or machine. The process of making by hand was briefly described. The pulp, being sufficiently ground, is allowed to flow into a vessel of stone, and kept moderately warm by means of a steam-pipe, and continually in motion by a wooden agitator; from this vessel the maker collects on a frame, covered with wire-gauze, the desired quantity of pulp, and by a gentle shaking motion compacts the material into paper, the water draining through the wire. The formation of the mould determines whether the paper shall be what is termed laid (ribbed) or woven.

By the aid of a large diagram, the author exhibited the various trade-marks inserted in paper as distinguishing symbols; and showed how some of our names,—as Foolscap, Hand, and Pott,—are derived from the water-marks of the early paper-makers. The insertion of intricate water-marks being justly considered an important method of giving security to commercial documents, many improvements had of late been effected; some of which were pointed out, and specimens of the various modes exhibited, both in outline and light and shade.

A number of sheets being made, the water is expressed and the paper hung up to dry, after which it is saturated with size. The superfluous size being pressed out, the paper is parted and slowly dried; the size thus thoroughly penetrates the paper.

The mode of making paper by machinery was illustrated by a diagram, and a model of the first machine erected in this country, and the passage of the wire through the knotter, or strainer, on to the continuous wire to the continuous felt, and thence on to the drying cylinders, was explained. The author observed, that the principle of the continuous wire and felt, and the shaking motion, had been retained in nearly all machines up to the present time. He then proceeded to describe; 1st. The various modes of separating the knots and lumps from the pulp by means of bars of metal laid close together, and a quick vertical and lateral motion being given to the strainer; the combination of concentric rings of metal with small openings between them, from the 50th to the 100th of an inch wide, the sieve receiving a vibratory motion up and down; the causing the diluted paper-pulp to pass between longitudinal apertures upon the surface of a revolving cylinder; and the passage of the pulp through fine slits cut in a solid metal plate. 2ndly. The different forms the continuous wire had been made to assume, the variation consisting principally in giving the web a cylindrical figure by means of covering a skeleton drum with wire-cloth, and causing the pulp to compact itself on the surface of the wire by the action of air-pumps attached to the axis of the drum. A cheap form of this machine is extensively used in the United States, but is not much used in this country, the horizontal Fourdrinier machine being the one chiefly adopted. 3rdly. The apparatus for compressing the pulp. This was formerly effected by perforated rollers upon the surface, but now more generally by the wire-web traversing over wooden boxes, from which the air is partially exhausted by means of pumps, or fans; a jet of steam has also been successfully applied to effect the same object.

After its passage through the sizing apparatus, the web of paper, in order to be cut into sheets, is caused to pass between circular knives which divide the web into narrow strips of standard width. This is easily accomplished; but the necessary cross cut is not so simple an operation, as the progress of the web must be temporarily arrested while the cut is being made, and then the paper be again advanced for a similar length, and so on continuously. Several ingenious plans for this purpose had been devised, one of which was illustrated by a diagram. When sized the paper will bear to be written on; but the surface requires smoothing, which is done in various ways, either by passing the web of paper between rollers heated by steam, termed Callenders, or by placing the sheets, when cut, between zinc or copper plates, and pressing the same in a rolling press; by hot-pressing, or subjecting the sheets to pressure from hot plates of iron, the paper being protected from extreme action by the intervention of glazed boards, — or by causing the sheets to pass separately between a heated cylinder and a solid paper roll accurately ground together. The sheets are then sorted, folded, and packed in reams, consisting of twenty quires, each quire containing twenty-four sheets, weighed by the Revenue Officer, and charged with a duty of 1½*d*. per pound, and five per cent.

Having noticed the principal points of the manufacture, the author referred to the many important interests connected with a large and cheap supply of paper; as newspapers, which, he remarked, were entirely indebted for the position they at present hold in the civilized world, to the conjoint assistance of the paper and printing machines.

It is interesting to trace the corresponding improvement in these two machines, so intimately connected, both being the work of the present century; the advantages of the printing machine could not have been developed had the paper-machine not poured forth its miles of web; and the paper-machine would have experienced little demand for its production, if the printing-machine had not been introduced and improved. They have so run their giant race together, that 300 square feet of paper per minute, and 10,000 impressions per hour, do not excite our wonder, because they are matters of daily occurrence. Nearly twelve millions of copies of the *Times* were issued in 1850, and its daily aggregate printed surface is stated to be more than thirty acres. Five hundred thousand double numbers, or one million of the Wellington number of the *Illustrated News*, had been printed.

The CHAIRMAN hoped there were some gentlemen in the room, who were prepared with suggestions on the subject of the impediments which prevented the application of paper to many manufactures for which it was suitable. He thought that amongst the impediments which were felt most strongly were the fiscal burdens. When Governments, in raising revenue, meddled with matters of trade, a great many inconveniences invariably followed, and the progress of the manufactures concerned was always arrested. In the matter of glass this had been strikingly illustrated; it was not until Sir Robert Peel removed the fiscal obstructions that its variety of uses were known or developed. Indeed he thought he might safely say that, but for the removal of that tax, it would scarcely have been possible to have had the noble building for the Great Exhibition. The Council of the Society had some time ago sent round circulars to the various Mechanics' and other similar Institutions, for the purpose of gaining evidence as to how far the fiscal restrictions on paper, advertisements, news, and foreign books impeded the growth of intelligence and the spread of knowledge. To these, answers were gradually coming in, stating to what extent the prejudicial influence of these restrictions was felt. He thought that as we now had a ministry in office who were resolved to look to the education of the people, the best thing Government could do would be, to take off the duty on paper. Cheap books appeared to him of even more importance at the present day than the schoolmaster; because they would percolate and make their way into society better. Perhaps the most important question as regarded these fiscal restrictions was the newspaper stamp; at least he would prefer to see it removed in preference to any other, but he should like better still to see all go together. In this Society, they had nothing to do with the question of revenue; that belonged to the Chancellor of the Exchequer. The removal of the impediments to the progress of science and intelligence was their province; and whether the present subject were regarded in a social, religious, moral, or manufacturing aspect, it possessed deep interest, and good must arise from the discussion.

MR. CHARLES KNIGHT said he was much struck by a circumstance mentioned in the historical introduction to the very interesting Lecture to which they had listened,—he referred to the statement that a Government, so long as three hundred years ago, in the time of Henry VII., bestowed a reward for some improvement to a paper-maker; in the present day, as Mr. Crompton could bear witness, there was nothing of the kind. There was one little circumstance in connection with the manufacture of paper to which he wished to call the attention of ladies,—he referred to the existence, in many even of the best papers, of small black spots on the surface. These were not found in old papers, they were confined to those of modern manufacture, and arose from the use of braid containing india-rubber, now much in use in ladies' dresses, and of which, in picking the rags, it was impossible entirely to get rid. What he wished more particularly to direct attention to, was the larger black spot of the Excise duties. In illustration he might be pardoned if he referred to the manufacture of books,—a class of manufacture of which paper was the raw material. He believed there was no other instance in this country in which there was a tax of 25 per cent. on the raw material of any manufacture; yet this was the case with paper. Take a pound of paper at 7½*d.*, which was a fair average price for printing paper, the duty was 1½ and 5 per cent., amounting in all to about 25 per cent. This was a tax which every one must admit was exorbitant and atrocious. The argument used to justify this was, that 1½*d.* was but a small addition to the price of a book weighing a pound, say the *Quarterly Review;* but this was not a fair way of meeting the question. Let them take a work like the *Penny Cyclopædia.* If it were necessary to bring out another edition, in order to pay expenses he must print 10,000 copies; each copy would need three reams of paper, say a 20lb. demy, 60lbs. at 1½*d.* would be 7*s.* 6*d.* Well, this might not appear much on a work costing 6*l.* or 7*l.*; but look at the effect upon him—before he could bring out this work to reform and enlighten the people he must pay in paper duty about 4,000*l.* Mr. Knight then proceeded to refer to the arrangements now being entered into between this country and America for an international copyright. He also drew attention to the present vexatious and tedious process of obtaining the "draw-back" on books that were to be exported, characterising it as a most intolerable impediment to trade.

MR. JOHN CASSELL said, that the fiscal enactments on paper had a restrictive influence both on the labour and on the books of the people. For instance, look at the raw material of paper; say it was straw, as they had just seen specimens of paper made from straw; the material was comparatively valueless; it was the labour which gave its value, and the tax was in point of fact a tax of two or three hundred per cent. on labour. Then, as regarded education—not simply the education of the rising generation, but of a vast proportion of the adult population of the country who were uneducated men, but not so much so as to be unable to read—this tax had a most injurious influence. He felt a deep interest in the education of this class, having belonged to it himself; and about twelve months ago he resolved to issue a periodical for the purpose of placing within their reach the elements of a complete education. He published for this purpose the *Popular Educator;* and as an illustration of the desire amongst the working classes for education, he might remark that the average circulation of this Magazine was 75,000 weekly. For issuing this penny periodical with a view to the elevation of the people, he had been taxed during the year to the extent of 1,385*l.* 15*s.* Other works of a similar description were, of course, taxed in like manner. The shilling *Euclid*, for instance, which he had published in consequence of a hint thrown out by the Society of Arts. Altogether, independently of the *Popular Educator*, he had paid annually 3,500*l.* for paper duty; and if this amount were expended in increasing his means of promoting education, it would be impossible to calculate the amount of good it might effect. In reference to the operation of the " draw-back " in exporting books, he mentioned an instance which occurred the other day, in which the excise-officer refused to seal a parcel of books he was sending off to America, just because he had put the name of an American publisher on the wrappers of the books, in order to secure the copyright. In regard to many other purposes to which paper was and might be applied, he might state that we could not compete with France in the manufacture of paper boxes, because in France they paid no duty on the material. He could not believe that a Free-trade Government would suffer this tax to remain, when it was considered how it pressed on many portions of the industry of the people. He trusted the Society of Arts would continue to prosecute the inquiry on which they had entered, and believed that success would be the result.

Mr. Varley offered some observations on the materials from which paper could be made, and spoke of the advantages afforded by the microscope for examining the texture of the materials to be so applied. A great objection to the use of straw was the fact, that not only were its longitudinal fibres so short and brittle, but that between these fibres were large cells, containing much pulpy matter, which prevented the paper being strong and tough.

Mr. Collett spoke at some length on the injurious operation of the paper duty, and the heavy outlay necessary previous to the issue of any great work. He contrasted with this the way in which the spirit-merchant was treated, in his goods being permitted to remain in bond until sold. If booksellers had been permitted a similar privilege, Mr. Knight would have been some thousands in pocket. The Chairman had referred to the repeal of the duties on glass; now paper was applicable to more purposes than glass was. Mr. Baldwin, a Birmingham paper manufacturer, had told him that if the duty was taken off, he could make doors of paper much better and stronger than wooden ones. If these duties were removed, an immense saving might be effected by having many operations performed at the place where the paper was manufactured, —a thing which, under present arrangements, was impossible. The circumstance of there only being two places in England—London and Manchester—where paper could be stamped for newspapers, was a practical prohibition to paper-makers at a distance engaging in that department. He believed that if the newspaper stamp were removed, the consumption of paper would be enormously increased; in confirmation of which, he referred to the success which had attended the recent issue of an unstamped paper in the Potteries. The duty prevented publishers paying first-class talent in authorship; and as the people would have periodicals, they now bought the trash which was issued at a low price.

Mr. Bucknall remarked, that a common objection to the repeal of the paper duty was, that there was only a limited supply of the material from which paper could be made; and that instead of increasing the quantity manufactured, larger profits would go into the maker's pocket, in case of repeal. The great question was, then, the discovery of new materials suitable for the purpose. To this end, he wished that straw should receive a due amount of consideration. He was aware it might not be possible to use it for the best papers, but still he thought that many of the objections to it might be overcome. He had been favoured by the patentees of the process for its manufacture with specimens in the various stages, which he would place in the hands of the Society.

The Chairman proposed a vote of thanks to Mr. Stones, which was carried unanimously.

It was announced that at the next meeting, on the 16th of March, a Paper would be read by J. O. N. Rutter, Esq., "On Warming, Ventilating, and Cooking by Gas."

DUTIES ON PAPER, NEWS, &c.

The inquiry which it was announced, in the last Number of the Journal, the Council had determined to prosecute on this subject, has been set on foot; and the following circular has been addressed to the Secretaries of all the Institutions in the United Kingdom as a preliminary measure:

Sir,—Upon a suggestion of the Institutes' Committee, made in the interests of the Institutions in Union with the Society of Arts, the Council have undertaken to prosecute an inquiry as to the operation of the present fiscal restrictions on Paper, Advertisements, News, and Foreign Books, not only as they affect the welfare of the Union, but also in their general bearing on the Arts, Manufactures, and Commerce of the country, which the Society by its Charter is bound to promote.

I am instructed by the Council to invite your attention, and that of the Institution with which you are connected, to this important subject. Any information that you can supply with regard to it will be thankfully received and carefully considered. They desire to bring the accompanying queries under your special notice, to which they will be glad to be favoured with an *early* reply.

I am, Sir,
Your obedient Servant,
Edward Solly, *Secretary.*

QUERIES PROPOSED BY SOCIETY OF ARTS.

March 8, 1853.

1. Has your Institution a News-Room, and how does it answer?

2. What number of—
   London Daily Papers,
   London Weekly Papers,
   Provincial Papers,
   Serials, and
   Quarterlies,
do you take in? and how far does the cost in each class affect the supply?

3. Which class is most sought after by readers, and do any difficulties arise in consequence of the demand for that particular class?

4. Is Local News sufficiently attended to in the local papers; and if not, to what cause is the neglect attributable?

LECTURES ON THE COTTON TRADE AND MANUFACTURE.

Mr. Warren commenced the third of the above series by quoting Bacon's learned work, "Novum Organon," to show the estimation in which the ancients held inventors, "paying them divine honours," and declaring their inventions to be "new creations, and imitations of the works of the Deity;" and by giving an extract from a letter of Sir Isaac Newton to Cotes, in which the superiority of the enlightened over the ignorant workman is clearly defined. He then proceeded to point out the superiority of the present over the old methods by which our manufacturing operations were conducted. The conditions upon which a nation's prosperity could only be secured was dwelt upon, and illustrated by the progress of the cotton-trade in this country. The great necessity for an abundant and cheap supply of raw material was strikingly shown by contrasting the condition of various trades during periods when the raw material was abundant and cheap, with those in which it was limited and dear. The advantages of accumulated capital in conducting industrial operations, and the benefits the operator derived from such accumulations, was popularly shown, and so was the necessity for the exercise of economy on the part of the artizan in the disposition of the wages received in return for his labour; and to the want of these habits of economy, Mr. Warren traced all the great evils which afflicted the operative classes. As the wealth of a nation was regulated not by what was sent out of a country, but by what was brought into it, in return for its exports, so, with every individual working-man, it was not by the mere spending of money, but by what it was spent in—by what was got in return—that his domestic comfort was regulated.

Mr. Warren then took a "roving" from its machine, and placing it in its proper position in the spinning-machine, it was converted into a fine and strong thread, fit for the making of calico, which consisted of "warp" and "weft," interlaced like ordinary basket-work. The "warp" was that part of a piece of cloth which constituted its length; and to make this, the "bobbins" were taken from the spinning-frame and placed in a machine, so that the threads could be wound upon another part of the machine called the "reel," in a spiral form. One traverse of the threads from the bottom to the top of this reel gave the length, and repeated traversings gave the number of threads that were required for the breadth of the web.

When taken from this machine, the warp was shown to have a tendency to curl. To prevent this, it was passed through the next, or sizing machine, which consists of a trough for holding starch made from sour flour and water; and a set of rollers, which can be so adjusted as to press out the superfluous starch, leaving only as much in the warp as will prevent the twisting, or "snarling." They were now ready for the last manufacturing operation—that of weaving; and after explaining the principles upon which a steam, or "power-loom," was constructed, Mr. Warren set one in motion, and wove some calico having a white warp with a pink "shoot," or "weft."

Mr. Warren concluded by speaking of the dignity of industry, and of its civilising influences and power for good. By adding intelligence and high-mindedness to industry, the workman, whether guiding the operations of the plough, the loom, or the council of state, was in a fair way to realise the loftiest conceptions of his nature—to become a blessing, not only to himself, but to his kind; and most earnestly would he (Mr. Warren) appeal to his audience that they should be untiring in their efforts to reach humanity in its lowest depth; for, surrounded though it might be by the mire of moral pollution, there still existed in the breast of man a spark of divinity which might, by the exhibition of kindly affection and true sympathy, be fanned into a holy flame of self-respect, which would make him feel too good for a position so degrading, and cause him to start into new life a better and a happier man.

On Friday, the 4th inst., His Royal Highness, Prince Albert, the President of the Society, examined the beautiful series of working models with which Mr. Warren illustrated his Lectures on the Cotton Manufacture. Mr. Warren exhibited the various processes which cotton undergoes in passing through the different stages of the manufacture, from the first separation of the fibre from its seed, down to the last operations of the calico-printer. His Royal Highness appeared to be much pleased with the completeness and perfection of Mr. Warren's illustrations.

COLONIAL POSTAGE.

On Friday a numerous and influential Deputation of the Council and City Committee of the Colonial and International Postage Association waited, by appointment, on Lord Canning, at the General Post-office. Mr. Moffatt, M.P., said that the merchants of London, and the country at large, for a very considerable time, had felt that we had been treating our Colonies very unfairly, in not extending to them the same advantages with regard to postal communication as those enjoyed by the mother country. These views would have been sooner pressed upon the attention of Government, but it had been thought better to wait till the success of the Penny Postage in this country had been placed beyond all question before asking for the extension of that most important measure to our Colonies and dependencies. The merchants of London wished to see not only a reduction of the rates of Colonial Postage, but they also wished for the establishment of one uniform rate, so that a letter to Scilly and a letter to Bombay should cost the same; and that uniform rate should be very low. This view was supported by the Lord Mayor. Other gentlemen of the Deputation spoke to the influence a reduced postal rate would have in putting a stop to evasions; to the advantage it would prove to life assurance companies; and to the benefits that would accrue to all classes of the community, not only to commerce and trade, but also to the increase and development of kindly feelings and affections. Lord Canning replied, that Her Majesty's Government were deeply sensible of the importance of the question; and as a proof of this, he might state, that a communication had been made to those of our Colonies which had the control of their own postal arrangements, proposing to reduce the Colonial postal rates to a uniform charge of 6d., to cover the entire charge from the sender to the recipient. This rate would be divided between the Colonies and the mother country, thus:—If the mother country found the packets, 1*d.* to the mother country, 1*d.* to the colony, and 4*d.* for the ocean transit. If the packets were provided by the colony, then the order would be reversed. In the case of ship letters, the rate to be divided equally between the mother country and the colony, 3*d.* to each. The rate on all newspapers would be 1*d.* His Lordship could not go all the way with the Deputation with regard to the comparison that had been instituted between the working of our inland Penny Postage and the effects it would probably have if extended to the Colonies. He perfectly agreed with the Deputation, that Colonial Postage must be first considered and arranged. With respect to foreign countries, the difficulties were enormous. Negotiations were pending between the Governments of this country, France, Spain, and Holland. It was proposed to make very considerable reductions, and the difficulty was to persuade the Governments of those other nations to come to the same conclusion.

ROYAL PORCELAIN COLLECTIONS.

In order that the instruction which the public were deriving from the inspection of the Queen's porcelain, at Marlborough House, might not be interrupted, Her Majesty has been graciously pleased to permit a second series of specimens to be made from the collections at Buckingham Palace, and exhibited at Marlborough House. This series is more numerous and varied, and, in some respects, even finer than that recently removed. It consists chiefly of old Indian, of the highest order, and of an extensive series of Sévres, illustrating the styles of different epochs of that Royal manufactory. Among them will be found a curious *déjeuner* service produced immediately after Napoleon's expedition to Egypt, in which the fitness of porcelain decoration is altogether sacrificed to an affectation of forms and ornaments belonging to the age of the Pharaohs; also, some very fine jewelled cups, and a superb bowl of hard porcelain, which was executed expressly for Louis Seize. Lord Faversham has also sent to Marlborough House some of his turquoise Sévres porcelain for public exhibition.

EXHIBITION OF CABINET WORK.

The following notice has just been issued by the Department of Practical Art. The Lords of the Committee of Privy Council for Trade having had under their consideration the desirableness of making a collection of fine specimens of cabinet work for the information of students of schools of art, and the public at large, have directed the Department of Practical Art to collect and publicly exhibit such specimens.

As the space at Marlborough House is now fully occupied by the museum and special classes, permission has been obtained from the Royal Commissioners for the Exhibition of 1851, to use such accommodations as may be afforded by Gore House, Kensington, where the proposed Exhibition will accordingly take place in the month of May next.

The space being limited, it is intended to exhibit only specimens of furniture which have been executed before the present century.

Her Majesty the Queen has been graciously pleased to allow examples, &c., from Windsor Castle, to be placed in the proposed Exhibition, and the loan of fine specimens has been liberally offered by several persons.

Possessors of cabinet work, willing to promote public instruction in this branch of manufacture by lending specimens, are requested to intimate their intentions to the Secretary of the Department of Practical Art, Marlborough House, Pall Mall, London, on or before the 5th of April.

The arrangements for the safe removal and return of any specimens which may be lent to the department have been entrusted to Mr. John Webb, of Old Bond-street.

Henry Cole.

Marlborough House, London,
5th of March, 1853.

COLONIAL CORRESPONDENCE.

NEW BRUNSWICK EXHIBITION.

By the Report of the New Brunswick Exhibition, recently held at Fredericton under the superintendence of the New Brunswick Society for the Encouragement of Agriculture, Home Manufactures, and Commerce, it would appear that the Exhibition has been a very useful and successful one. The catalogue includes upwards of 2,000 entries, and the list of awards contains 46 honorary diplomas, 313 money awards, and a considerable number of "honourable mentions." These awards are arranged in the Report under the following heads:

Class I.—Mineral Kingdom ..	Sect. A—Raw Materials. Sect. B—Manufactures chiefly in metal.
Class II.—Vegetable Kingdom	Sect. A—Raw Materials. Sect. B—Manufactures chiefly in wood. Sect. C—Manufactures from grain, fibres, &c.
Class III....................	Sect. A—Live Stock, &c. Sect. B—Manufactures from parts of animals.
Class IV.—Fine Arts, &c. &c.	

The relative importance of these several classes may, to some extent, be judged of from the following list of the Juries:

1. Raw Materials from the mineral kingdom.
2. Grinding and polishing materials.
3. Bricks.
4. Machinery and engines.
5. Stoves, edge tools, brass, tin, and copper work, and agricultural implements.
6. Carriages and vehicles of all sorts.
7. Wood and implements chiefly of wood.
8. Cabinet-makers' work.
9. Musical instruments.
10. Garden and farm produce.
11. Green-house plants.
12. Fruits.
13. Grain manufactures.
14. Butter, cheese, sugar, and honey.
15. Domestic manufactures.
16. Millinery, embroidery, and needlework.
17. Hats, furs, and tailor's work.
18. Leather, and leather manufactures.

19. Soap, candles, bread, and confectionary.
20. Salt meats and fish.
21. Fine Arts.
22. Clocks and watches.
23. Astronomical, surveying, and electrical instruments.
24. Philosophical machines and models.
25. Improved trusses.
26. Ornamental gilding.
27. Horses.
28. Cattle—distinct breeds.
29. Cattle—mixed breeds.
30. Sheep.
31. Swine.
32. Poultry.
33. Ploughing.
34. Miscellaneous matters.

In a letter from Mr. Robb, the Secretary of the New Brunswick Society, it is stated that they are taking active measures that the Colony shall be well represented at the Dublin Exhibition of this year; and, likewise, that progress is making towards the preparation of a general catalogue of Colonial raw produce; in accordance with the suggestion made some months since to the various corresponding societies by the Colonial Committee of the Society of Arts.

HOME CORRESPONDENCE.

THE DECIMAL CURRENCY.

Feb. 26th, 1853.

Sir,—As most travellers will do, I take a lively interest in the movement now going forward with regard to the adoption of a British Decimal Currency; and as I was not able to join in the interesting discussion on this subject reported in this week's number of the Society's Journal, I shall feel obliged by your inserting in the next, the following notes, founded on the experience of various monetary systems, acquired during repeated and prolonged stays in various parts of the continent, and especially at Paris.

1. A change so desirable as the substitution of a well combined Decimal Currency for the present imperfect duodecimal one, should not be retarded by too closely associating it with a change in our weights and measures, and still less by connecting it with an attempt to establish an universal currency.

2. Supposing even that the adoption of an uniform system of coinage for all commercial nations were at once feasible, the standard of one country would very soon bear, with respect to that of another, a premium or discount, inevitably resulting from the turn of trade, and intimately connected with interests which it would not be expedient to interfere with.

3. The pound, or sovereign standard, with its natural subdivisions, ten by ten, down to an unit of about the value of a farthing, would afford a currency more eligible than that of either France or the United States.

4. Those, who, like myself, have watched, during the reigns of Louis XVIII., Charles X., and Louis Philippe, the very slow progress in popular favour of the French decimal, or rather centesimal monetary system, will agree that it has been an actual failure, compared with the rapid development which might have been expected from a system of such unquestionable theoretical excellence, favoured by the mathematical turn of the French mind, and pushed on by Government influence in a country which is the very prototype of centralization.

Of the various causes which may be assigned for this anomaly, one of the most obvious, and which it behoves us most particularly to avoid with regard to our own proposed new currency, is, that the French system, as I have hinted above, is rather centesimal than decimal. Instead of paying to the *décime* the honour which was due to it, calling it to habitual use in monetary phraseology, allowing it a distinct column in monetary arithmetic, and making of it a stepping stone for uneducated intellects between the *centime* and the *franc*, one kind of denomination only, and one column with double figures, were adopted for the expression of everything under 100 centimes.

Now even the attic *prolétaires* of the capital, and still more the Bœotians of the provinces, very naturally thought that it was easier to count up to 20 with sols, or sous, as they call them, than to run centimes up to 100. Supported by this consideration and by the more convenient value of the sol as unit, and backed, of course, by all the prejudices which never fail to muster in favour of long established habits, and patrimonial associations, the old vocabulary offered so obstinate a resistance, that it took almost half a century to drive it from its strongholds in the *petit commerce;* and even now it is lurking in the market-places, and lives on unheeded in village snuggeries.

5. The arithmetic of the poorer classes is much more ready to go upwards by multiplication from the small coin to the large one, than to descend by division from the pound to the farthing.

6. It will be necessary, for the success of the new monetary system, that at the same time that the scale of values is convenient, the names attached to the latter be such as to be readily taken up by the million, with brief manageable plurals easily hooked on to a multiple, like the word "pence."

7. The objection that the expression of a sum in four denominations would involve too many syllables, will be met by a reference to the present manner of expressing complex sums, and by an appeal to the happy facility which we have in England for understanding more than is expressed, as when 2*s.* 6*d.* are expressed by "*two* and sixpence," or 1*l.* 4*s.* by "one pound *four.*"

8. In pursuance of the views expressed in the preceding paragraphs, I would propose the annexed scale, which I have endeavoured to adapt to the simple and natural notions of those classes which, as far as the small currency is concerned, can certainly raise the first claim to have their convenience consulted.

Pounds. M.	Florins. C.	Tens. X.	Ones. I.
			1
		1	0
	1	0	0
1	0	0	0

9. Many names have been proposed.—For the *Florin*—Victorine—Albert—Decine. Would "*ine*" in this name and the others of the series given below be pronounced after the English fashion, or the French, or either, according to the education or taste of the parties?

For the *Ten*—Groat; (a denomination already in the popular vocabulary) — Centine — Tenth. Would this name imply that the florin were the standard?—Ring; this might be rather appropriate; for as a ten in silver of the usual shape would be rather too small for conveenience, it might be expedient to have it either annular, or formed of a small disc of silver, surrounded with a ring of copper or bronze.

For the *One*—Various names conveying the sense of unit, or minimum—Milline—Cent; open to the question mentioned above in reference to tenth—Rose, with a representation of a rose on the coin; not a bad idea, were it not ungracious to omit the Thistle and Shamrock.

The names which I should wish to propose are those which head the Table. I give the rest because I think that the opinions of many ought to be canvassed on a subject which concerns all. Yours, &c.,

T. TWINING, JUN.

THE DECIMAL COMPUTATION.

Cheltenham, March 5th, 1853.

SIR,—As my attention was given to the subject of "decimal computation" many years since, with the view of its being brought before Parliament by MR. CANNING, I have read with great interest the report of the proceedings of the Society of Arts, on the 23rd ultimo.

DR. BOOTH seems to be of opinion that the change from the present system to a decimal computation should not "be introduced bit by bit;" and that "to make any alteration without making all, would bring about most intolerable confusion."

On the contrary, it may be apprehended that the attempt to make so complete a change as that contemplated by Professor JACK, would have to contend with an array of ignorance, prejudice, and alarm, which would prevent its being carried into effect.

The practical, and — I say it without offence—the more sensible plan, is that suggested by MR. W. BROWN,—to give powers by an Act of Parliament, which may be put in force by orders in Council, at the times most favourable for introducing progressive changes.

A commencement with the monetary system seems the most desirable, because it is the most simple, and would be forced upon the attention and comprehension of all classes by their daily wants; and with some trifling alterations in his nomenclature, Mr. Brown's plan is the best and clearest that has been proposed, and easily combines with the one suggested in the Report of the Liverpool Chamber of Commerce. The thousand parts into which it is proposed to divide the pound (or sovereign) can scarcely be called *cents;* we must either still call them farthings, or take Professor Jack's term of *millines*, which would soon, in use, become shortened to *mils*. The term *Albert* is unnecessary, as we have already the *florin*.

In every other respect it is impossible to improve upon the plans brought forward by Mr. Brown. Except the fourpenny piece, none of our coins need be thrown out of circulation; and the only change would be in the penny, which would contain *five* farthings, instead of four; or, more correctly, would be $\frac{1}{1000}$ of a pound instead of $\frac{1}{960}$. In use, the whole of the coins would be the same as before; and the only change to which the public would have to accustom themselves would be, that what they had purchased for a shilling would be put down in the account as 50 *mils.;* but with this they would soon become familiar, if the fractional parts of 25, 50, 100, 250, 125, &c., were stamped upon each coin.

Such an approach to the new system as this might be easily introduced, and the rest would follow.

You will perceive that I treat the matter practically, and as a business question; and it is only in this way that the people of England will ever give it their attention. The advantages of a decimal computation (as they must see) are the greater facility with which a knowledge of accounts will be acquired, the diminished liability to error, and the saving of time, both in making the calculations and in the fewer figures by which they may be expressed.

I am, Sir, yours respectfully,

W. M. T.

PATENT LAW REFORM.

SIR,—As the Society of Arts took a very active part in the last movement for Patent Law Reform, a matter in which I have taken an active part myself, I hoped to have seen some general remarks in its Journal on the unsatisfactory way in which the New Patent Amendment Act is, in many respects, administered, and especially as regards the decision come to during the Chancellorship of Lord St. Leonards, that in no case the old practice of granting patents, embracing the *Colonies* be adopted under the New Act, although the Act provides that in certain cases the colonies may be embraced by the patent. Now this new rule is, I believe, founded on some idea that these matters ought to be left to the independent action of the colonies, although some of the colonies are not in a position to act independently of the Home Government, and the Act itself has expressly provided, that no patent, although it should be stated to extend to the colonies, shall embrace any colony the local laws whereof shall declare the same invalid.

I think it will be needless to justify to the Society of Arts the policy of granting patents for inventions, as a means of inducing the expenditure of the necessary time, thought, skill, and capital, in the cause of industrial improvement, is of importance to the colonies as well as to the mother-country; and if this be so, the same aids to advancement therein must be equally needful to both.

Now sugar, cotton, and gold, are staple articles in the colonies, to effect the production of which with as little labour as possible, is equally important to England and the colonies; both of them, therefore, with the view to obtain this desideratum should be included in the operation of the Patent Laws.

In conclusion, it may be stated, that the Commissioners of Patents have been applied to without success, which is what might be expected, seeing the Board is composed *entirely* of *ex officio* members, each engrossed by the duties of other important national offices, which, having made a set of rules, now abandon them to their fate. Altogether matters are now in such a position that, although much has been effected, much remains to be done, and inventors and all interested cannot do better than form a permanent association for the completion of Patent Reform.

I am, Sir, yours, &c.,

F. W. CAMPIN.

PHOTOGRAPHY.

SIR,—I little imagined that my suggestion of a blue tinted object glass for the photographic camera would produce the very valuable communication from one of the first photographers of this country, which appeared in your thirteenth Number; but I will endeavour to explain my views on this subject rather more fully than in my former concise notice.

Three spectra are produced by the prismatic refraction of the sun's rays, namely, the thermic, the actinic, and that from the light rays; the latter alone making an impression on our organs of vision, while we are made aware of the two former by thermic, or chemical action. There may be, possibly, other spectra, more particularly as there is much mystery attached to the black bands, which, under favourable circumstances, are plainly visible in all parts of the light spectrum. In the case of the light rays, it is well known that a perfect image cannot be formed in the focus of the object glass without correcting the chromatic aberration, which is now always done. There still remains the aberration of sphericity, but it is not of great magnitude, and is now almost annihilated by first-rate opticians. We have proof also, from the great extent of the spectra, of thermic and actinic aberration; but I am not aware of the existence of any means of correcting either of those, unless the supposition be founded on the fact that the double or triple achromatic object-glass will also rectify the thermic and actinic aberrations.

Further, it is a well ascertained fact that the photographic picture is formed by the actinic rays alone, and my suggestion of a blue tinted object glass was made with the view of reducing the causes of error to one only, and allowing none but the actinic rays to pass through the object glass; and I am rather surprised that Mr. Claudet did not place a thin sheet of blue tinted plate glass before one of his cameras, which would at once have proved its usefulness or otherwise. The copying a print is not a case in point; it is a true and faithful representation of nature that we want, such as we see on the ground glass in the camera. Moreover, I had not photographic portraits in my mind at the time, but rather views of buildings and monuments of great architectural beauty, which I should wish to see represented in the style of *Prout* or *Canaletti*, with a proper artistic gradation of middle tints from the brightest light to deepest shade; nor do I understand how excluding the light rays which confessedly do no good, but which may possibly do great harm, can be any disadvantage. Every experienced photographer can focus the camera for the actinic rays, and therefore cannot require the very bright light rays for focusing.

As my only object is the improvement of the photographic art, I shall take this opportunity of making one or two suggestions with that view. First, I should wish that the photographic camera could be constructed of such a size that the photographer could place himself inside, with a stool and shelf, upon which he might perform the whole of the manipulations; and that the sensible tablet should not come out of the camera until it was completely fixed. On the outside of the camera there should be a yellow glass lantern with reflector, showing a light inside. There should also be sliding shutters fitted to it inside, as well as to the object glass; and of course the camera should be well and thoroughly ventilated. It will be said that there are formidable obstacles to such a procedure; but what *would* have been said fifty years ago to the proposer of a sub-marine electric telegraph, or of photography itself?

Another suggestion I would make, would be the introduction of the principle of Mr. Varley's graphic telescope into the construction of the camera. By the enlargement of the image the sitter might be placed at a much greater distance, still obtaining photographs of the usual size, a process which would render the perspective much less harsh. Portrait painters always imagine their sitters to be placed at a much greater distance than they really are; otherwise their perspective is false, as any one may convince himself by holding up his two hands at unequal distances from his face, when he will find that he can make the nearer hand appear twice the size of the other that is more distant; a circumstance never observed in the works of portrait painters, but constantly and necessarily in photographs as they are now produced. All the features nearer the camera are represented larger in proportion than those more distant; and unless some change be made, photographs will never become, in common phrase, pleasing likenesses.

I am, Sir, &c.

Parkstone, Feb. 23, 1853. HENRY W. REVELEY.

MEASUREMENT OF TONNAGE.

London.

SIR,—In the Society's Journal, a discussion has been raised which I hope will not be hastily dropped, and which I think very important, namely, that of the advancement of marine navigation. A letter appeared (in No. 7, page 76) from *a correspondent*, which first brought the matter before you in a report of the progress of marine navigation of 1852; and, although it contained one or two errors of arrangement, led to two letters. One (in No. 9, page 104) from Mr. W. Roberts, making a statement about the new method of advancement, as laid down by the new law, which was not quite correct either. The second (in No. 10, page 116) from Mr. Henry W. Reveley, which again called attention to the subject in answer to the first.

I must now refer you to a very explicit and valuable work by Admiral Moorsom, going most fully into the old and new methods of measurement, and pointing out the defects of both, and preparing a new mode of internal measurement, which he is very capable of giving, having been on a Committee of investigation, the labours of which led him to write his present work, and which, to my mind, answers all the purposes most perfectly. It proposes to give the capacity of the hull, and not to any false notion about the distance between the perpendiculars and her size amidships, at the water line. A pamphlet from B. Sharpe, Esq., R.N., also gives general views in the same direction, and which would leave the builder much more free, as to the best form for capacity and sailing or steaming purposes.

There is no reason why the Americans should beat us in the form of their ships. We surely have as large an amount of science amongst our ship builders as they can possibly have; the only reason is, that our laws bind us improperly in a false direction.

I could make large extracts from the work by Admiral Moorsom, but I do not wish to occupy, unnecessarily, your space.

Allow me to mention, that if Dock Companies were the only owners and builders of ships, the form they would most likely adopt would be parallelograms with rounded ends or Dutch galliots, containing a nearly square admeasurement, so that their docks would contain a greater number of ships with a larger burden, whereon to pay dock dues. And if merchants and underwriters were the only owners and builders, they would require only speed, or ought to do so, for they would ensure a more speedy return of their money, and much less risk at sea, by the reduced number of days the ship would be exposed to the dangerous elements. If a clipper could always ensure a passage of 98 to 100 days from Canton to London, surely she would greatly diminish the chances of accident or loss than if she occupied twice that time, which some of the old tubs now take, and would fetch a larger payment per ton.

You will now perceive how very necessary and important it is to have improvement, in the forms of ships, to effect fast sailing. If it is found desirable even with the Newcastle colliers to build new ships, and have auxiliary screw power to ensure speedy journeys to the port of London on a passage of a week or a fortnight at the farthest, how much more desirable would it be to apply the auxiliary power to the best sailing ships,—with a feathering screw, so that they might not be obstructed when sailing,—which perform voyages to the antipodes or to China.

There are great numbers of sailing vessels now lying rotting in the ports of Australia on account of the desertion of the crew. If they had had screws in their tails, with a very few men, they might have been enabled to reach some port by means of that power, by steaming, where labour is cheap and obtaining Lascars or Indians would have been brought home again. Labour in Calcutta can be obtained to any amount at a very cheap rate, and by these means perhaps advancement and civilisation could be given to another of our colonies.

I merely throw out these ideas in the hope that they may bring correspondents on the subject of the advancement and beneficial results of ship building and steam propulsion, whereby already great benefits have been effected in most parts of the world. Yours, &c.,

H. M., Member.

PROCEEDINGS OF INSTITUTIONS.

London.—On Monday evening the 28th of February, at a meeting of the members of the St. Michael's (Pimlico) Literary, Scientific and Mechanics' Institution, the Rev. J. H. Hamilton, M.A., President, in the chair, a Lecture was delivered by Mr. W. Walker, "On Superstition." Afterwards, the President presented to Mr. Joseph Bannister, the Honorary Secretary of the Institution, a silver inkstand, the joint voluntary subscription of the friends and members, in recognition of his zeal and exertions in promoting the interests of the Institution. The President announced that a donation of 460 volumes, chiefly of a scientific character, had been received from Mr. Frederick Robinson, of Pimlico.

TO CORRESPONDENTS.

Notice.—Members, and others, who can furnish or obtain original information or suggestions on the subjects included in the Society's Premium-list, or other topics connected with the Society's various departments of operation, are invited to communicate the same to the Secretary, in as condensed a form as possible, for the purpose of being either read and discussed at the evening meetings, or inserted in the Society's weekly Journal. Anonymous letters cannot be attended to. All communications, whether the author's name is to appear or not, must be accompanied by the writer's name and address.

Country Institutions.—Correspondents who are so good as to send reports of proceedings of Local Institutions, are requested to forward them immediately after the Meeting to which they refer, and not later than Tuesday morning, if intended for insertion in the following Friday's Journal.

A neat Case, for holding the Numbers of the Journal for half a year, is now ready, and may be had of the Publisher, 186, FLEET-STREET, price 1s. 8d.

Members of the Society who do not receive the JOURNAL regularly, are requested to give immediate notice to the Secretary; and, in order to prevent mistakes, they are particularly requested to signify any change which they desire to have made in their address, with as little delay as possible.

ANSWER TO CORRESPONDENT.

Anti-corrosive Paint.—We are informed that Walter Carson and Son, 9, Great Winchester-street, Old Broad-street (successors to the original inventors), and Messrs. S. and W. Tudor, 166, Upper Thames-street, are manufacturers of this material.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par. No. *Delivered on 3rd March, 1853.*

129. Duchy of Lancaster—Account.
141. Occupiers (Ireland)—Return.
166. Public Petitions—Return.
164. Bills—New Trials (Criminal Cases.)
168. „ —County Rates and Expenditure (amended).
183. „ —Jewish Disabilities.

Delivered on 4th March.

103. Mint—Account.
184. Expiring Laws—Report from Committee.
187. Metropolitan Improvements—Accounts; Convict Discipline and Transportation—Further Correspondence.

Delivered on 5th and 7th March.

186. Committee of Selection—Second Report.
78 (1). Derby Election—Index to Minutes of Evidence.
149. Turnpike Trusts (Ireland)—Abstract of the General Statements of Income and Expenditure.
178. Irish Reproductive Loan Fund—Account.
179. Battersea Park—Copy of Letter from T. Cubitt, Esq.
191. Local Acts—Reports of the Admiralty.
192. Trade and Navigation—Accounts.
194. Bills—Places of Religious Worship Registration.
196. „ —Cathedral Appointments.
197. „ —Burghs (Scotland).
188. „ —Payment of Wages.
195. „ —Judges Exclusion.
200. „ —Metropolitan Improvements (Repayment out of Consolidated Fund) amended.
201. „ —Oaths in Chancery (amended).
202. „ Law of Evidence (Scotland).
Prisons—Seventeenth Report of Inspectors (Northern and Eastern Districts), Part II.

Delivered on 8th March.

181. Court of Chancery (Suitors' Fund)—Return.
185. Cambridge Election—Minutes of Evidence.
187 (1). Metropolitan Improvements—Account.

Delivered on 9th March.

113. Emigrant Ships—Return.
156. Dissenters' Places of Worship—Return.
189. Foreign Shipping—Account.
193. Bill—Fisheries (Ireland).

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED

From Gazette, 4th March, 1853.

Dated 15th Jan., 1853.

106. H. C. Nion—Apparatus for refrigerating.

Dated 29th Jan.

228. T. H. Wilson—Securing carriage-gates, doors, &c.

Dated 3rd Feb.

292. J. Heckthorn—Colouring buildings, &c.

Dated 16th Feb.

401. J. Cutler—Spoons, forks, &c.
403. G. G. Mackay—Drain-pipes.
404. J. Skertchly—Copying press.
405. J. Day—Protecting insulated wires.
407. J. G. Perry—Bookbinding, and facilitating the finding of places in books.
409. W. Jones—Stretching woven fabrics.

Dated 17th Feb.

413. J. Murphy—Permanent way.
414. W. Pidding—Saccharine substances, and apparatus for treating same.
415. M. Walker—Improvements in vessels for beer and other liquors.
416. C. Gordon—Goniometric protractor.
417. D. Cochrane—Improvements in closing doors.
419. G. L. L. Kufahl—Atmospheric currents for motive power.
420. W. Hawes—Refining sugar.
421. C. Watt—Coating iron with copper and brass.
422. Isaac Frost—Reaping.

Dated 18th Feb.

424. J. Horsfall—Pianoforte-wire, &c.
425. C. B. Clough—Apparatus for detaching boats, &c., from their moorings.
426. W. Darling—Manufacture of iron and other metals.
427. C. Kinder—Mantelpieces.
428. H. Noad—Treating grain, and obtaining products therefrom.

Dated 19th Feb.

430. J. White—Fastenings for harness.
431. F. C. Hills and G. Hills—Refining sugar.
432. W. R. Dell—Dressing flour.
433. C. Cowper—Zinc white.
434. C. Nightingale—Drying and heating certain substances.
435. J. Anderson—Motive power.
436. P. A. Tourniere—Propelling.

Dated 21st Feb.

437. W. Jones—Steam-pipes for warming, &c.
438. S. R. Samuels and R. Sands—Looms.
439. J. O'Leary—Numbering entrance and exit of passengers in omnibuses.
440. J. Ramage and T. Coffey—Chandeliers, &c.
441. J. Mash and J. S. Bailey—Machinery for textile fabrics and manufacture of same.
442. W. Pidding—Coverings for feet of bipeds or quadrupeds.
443. R. Farrant—Improved chimney-pot.
444. E. Miles—Railway-breaks.
445. T. Bell and R. Chrimes—Improvements in valves.
446. B. Barton—Improved bath, which may be used as a life-boat.
447 J. C. Pearce—Steam-boilers.

448. J. D. M. Stirling—Manufacture of wire.
449. W. Wilkinson—Ropes, bands, &c.

Dated 22nd Feb.

450. J. and T. B. Hudson—Bricks, tiles, drain-pipes, or tubes.
452. G. Winiwarter—Firearms.

Dated 23rd Feb.

454. S. Beckett—Mule spindles, &c.
456. E. T. Brookes, J. Black, G. Stevenson, and W. Jones—Machinery for looped fabrics.
458. R. Plant—Safety-lamps.
460. S. C. Lister—Improvements in treating soapsuds.
462. A. C. Engert—Joints of parasol-sticks, &c.

WEEKLY LIST OF PATENTS SEALED.

Sealed 5th March, 1853.

182. Samuel George Archibald, of Pall-mall—Improved mode of extracting or rendering animal fats and oils.
228. William Edward Newton, of 66, Chancery-lane—Improvements in machinery for boring or cutting rocks or other hard substances, for the purpose of tunnelling through mountains, or making other excavations.
229. William Edward Newton, of 66, Chancery-lane—Improvements in the means of producing a vacuum for various purposes, such as condensing steam, pumping water, exhausting air, or other purposes where a vacuum is required.
256. John Cronin Jeffcott, of 1, Anglesea-street, Cork—Producing heat for generating steam, and applicable to and for other purposes for which this invention has not hitherto been used, under the name and title of a heat-producer and steam-generator.
269. William Vaughan Morgan, of Jewin-crescent, London—Improvements in the preparation of oils for the purposes of illumination and lubricating machinery.
401. William Edward Newton, of 66, Chancery-lane—Improvements in washing and amalgamating gold and other metals.
442. William Newton, of 66, Chancery-lane—Improved machine for separating ores, metals, and other heavy substances, from mud, sand, gravel, stones, and other impurities.
676. William Edward Newton, of 66, Chancery-lane—Improvements in the manufacture of the carbonate of soda.
690. James C. Booth, of Philadelphia, Pennsylvania, United States of America—Manufacturing chromate and bichromate of potash from chromic iron or chrome ore.
692. William Edward Newton, of 66, Chancery-lane—Improvements in the construction of axles or axle-trees.
722. George Kendall, of Providence, Rhode Island, United States of America—Improvements in apparatus to facilitate the manufacturing of mould candles.
816. William Edward Newton, of 66, Chancery-lane—Improvements in the manufacture of paper. (A communication).
966. James Buchanan, of Glasgow—Improvements in the treatment of flax and other similar vegetable fibrous substances, and in the machinery employed therein.
1041. Alfred Vincent Newton, of 66, Chancery-lane—Improved apparatus for regulating the density of fluids. (A communication.)
1079. Sir Francis Charles Knowles, of Lovell Hill, Berks, Baronet—Improvements in the manufacture of iron.
1163. Alfred Vincent Newton, of 66, Chancery-lane—Improvements in obtaining and applying motive power. (A communication.)
31. William Louis Sheringham, of Southsea, Hants, Captain in Her Majesty's Royal Navy—Illuminating buoys and beacons in harbours, roadsteads, and rivers.
40. William Beales, of Louth, Lincolnshire—An improved cement for the resistance of fire.

Sealed 9th March.

23. Jean Baptiste Lavanchy, of Richmond-buildings, Soho—Improvements in wind musical instruments, where metal tongues are employed.
140. Thomas Robson, of Woolwich-road—Improvements in apparatus for igniting signal and other lights.
153. David Stephens Brown, of 2, Alexandria-lodge, Old Kent-road—Invention of an agricultural implement for tilling the soil.
164. John Robert Johnson, of Stanbrook-cottage, Hammersmith—Improvements in fixing colouring matter of madder in printing and dyeing.
168. John Macintosh, of Berners-street—Improvements in compositions to be used as paints.
238. William Gilbert Elliott, of Blisworth, Northampton—Improvements in the manufacture of bricks, pipes, tiles, and other articles capable of being moulded.
521. John Cross, of Blue Pits, Rochdale, Lancashire—Improvements in steam-engines.
633. John Macintosh, of Berners-street—Improvements in projectiles and cartridges.
769. John Wheely Lea, of Worcester, and William Hunt, of Stoke Prior, Worcester—Improvements in utilizing the waste heat of coke furnaces.
793. John Robert Johnson, of Stanbrook Cottage, Hammersmith—Improvements in the manufacture of type or raised surfaces for printing.
815. John Wheely Lea, of Worcester, and William Hunt, of Stoke Prior, Worcester—Improvements in the manufacture of iron.
882. Antonio Fedele Cossus, of University-street—Improvements in lubricating apparatus.
908. Francis William Ellington, of Drummond-street, Euston-square—Improvements in the making of screws for collapsible and other vessels.
987. Alfred Vincent Newton, of 66, Chancery-lane—An improved mode of transportation for the conveyance of letters, packages, freight, or passengers from one place to another. (A communication.)
1101. Thomas Elliott, of Stockton-on-Tees, Durham—Improvements in steam-engines, which are also applicable to pipes.
1126. William Edward Newton, of 66, Chancery-lane—Improvements in lamps, and in apparatus to be used therewith. (A communication.)
1130. Alfred Vincent Newton, of 66, Chancery-lane—Improvements in the means of urging the fires and increasing the draft of furnaces, and in arresting the sparks given off from the chimneys of locomotive engines. (A communication.)
1135. William Aspdin, of Gateshead-upon-Tyne—Improvements in the manufacture of Portland and other cements.
1186. John Copling, jun., of the Grove, Hackney—Invention of a safeguard railway signal.
1191. William Edward Newton, of 66, Chancery-lane—Improvements in the manufacture of carpets. (A communication.)
6. Thomas Billyeald, of Ison-green, Lenton, Nottingham—Improvements in the apparatus and arrangement of apparatus for making looped fabrics.
32. Edward Hutchinson, of Tyldesley, Lancashire—Improvements in the mode or method of preparing, cleaning, drying, and otherwise treating wheat, pulse, seeds, and other grain.
41. Peter Graham, of Oxford-street—Improvements in the manufacture of carpets and other piled fabrics. (A communication.)
50. Richard Gittins, of 2, Thayer-street, Manchester-square—Improvements in tills.
66. John Davie Morries Stirling, of Larches, Camphill, near Birmingham—Improvements in the manufacture of percussion-caps.
72. James Thornton, of Derby, John Thornton, and Albert Thornton, of Melbourne, Derbyshire—Invention of improved nets and other textile fabrics to be used for gloves and other purposes, and for the machinery to be employed in the manufacture thereof.
73. Joseph Robert Wilkin Atkinson, of Leeds—Improvements in machinery for preparing and spinning flax, tow, and other fibrous substances.
86. Edward Haslewood, of Tufnel-park, Holloway—Improvements in firearms and projectiles. (A communication.)
89. John Bennett, of Bradley Mills, Huddersfield, and Henry Charlesworth, of Huddersfield—Improvements in doffing and preparing rovings of wool.
101. William Steads, of Redcross-street, Leicester—Improvements in blinds, maps, charts, and other articles, wound on rollers.
121. Henry Browning, of Bristol—Improvements in preparing compositions for coating iron, and other ships' bottoms and other surfaces.
123. Orlando Reeves, of The Castle, Taunton—Improvements in the manufacture of manure.
130. Sydney Smirke, of 24, Berkeley-square—Improvements in apparatus for giving signals on railways.
182. Warren Fish Shattuck, of 373, Strand—Invention of a smut-machine. (A communication.)

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Date of Registration.	No. in the Register.	Title.	Proprietor's Name.	Address.
March 3	3428	Improved Gas Retort	Ebenezer Thornton	Huddersfield, Yorkshire.
,, ,,	3429	An Air-tight Screw Nozzle for Powder Canisters	Chas. Berwick Curtis	74, Lombard-street, London.
,, 7	3430	Tylor's Gardener's Syringe for Conservatories	G. Tylor and Sons	Warwick-lane, London.